

93-006 17684



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

ACTION 1/2 ✓

DUE DATE

OCT 25 1993

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Ref. 8HWM-FF

Mr Richard Schassburger
U S. Department of Energy
Rocky Flats Office
P O Box 928
Golden, CO 80402-0928

Re: Statistical Comparison of Remedial Investigation Data and Background Data at Rocky Flats

Dear Mr Schassburger:

EPA met with representatives of the Colorado Department of Health (CDH), the Department of Energy (DOE), and its contractors on September 29, 1993, to review a strawman proposal for implementing the recommendations of Dr. Richard Gilbert for comparing environmental data to background data at Rocky Flats. This letter formally notifies you that we accept the strawman proposal with the understanding that the following modifications and clarifications are made before implementation.

1. To determine the appropriate background and operable unit populations for comparison, we understand that some matching of the two populations is done by geologists and chemists. Data for an analyte in a non-background area are grouped according to a combination of background classes which represent independent background populations. A table that cross references the operable unit populations and the background populations will be provided.
2. A more explicit statement of the null hypothesis that is being tested will be included. In addition, a fixed p value of 0.05 will be used for each of the inferential statistical tests as written in the strawman proposal. There was some inconsistency in what is written in the proposal and what was stated in the meeting regarding the p value. A fixed value of 0.05 is what we will accept.
3. All references to comparison of background and operable unit populations for organics will be removed. Background comparisons apply to inorganics and radionuclides only.

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4. The use of professional judgement in interpreting the results of the graphical displays and statistical analyses will be limited to consideration of spatial distribution, temporal distribution, and pattern recognition concepts. The strawman proposal included five additional criteria. These will be deleted in the final implementation document.

5. The non-background population is defined as the entire operable unit remedial investigation data set. The data aggregation for the purpose of background comparison will be done within the area defined by the operable unit boundaries.

6. The attached flowchart, "Background Comparison Methodology", distributed at the meeting will be clarified. It is EPA's understanding that all the data sets will undergo the hot measurement test and the battery of inferential statistical tests (Gehan, Quantile, Slippage, and T-Test) provided the data satisfies the conditions stated in the strawman and on the flowchart. If any one of these tests, including the hot measurement test, shows significance, the analyte will be further considered, using professional judgement, as a contaminant of concern. The flowchart would benefit from the addition of decision blocks after each test indicating the next step if significance is demonstrated or not. We also have some specific questions which need to be addressed in the final document.

a. What happens to data which is carried through the slippage test but does not qualify for the t-test?

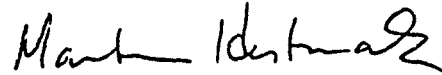
b. What is the basis for the 20% detect value as the criteria for the Quantile test? How does this criteria relate to the criteria for applying this test as stated in Dr. Gilbert's report on page 20?

c. What is the basis for the criteria of $N > 20$ value for background and operable unit data?

The cost and schedule impacts of implementing Dr. Gilbert's recommendations were also briefly discussed at the September 29, 1993, meeting. EG&G's claim that these impacts could range from \$30,000 up to \$120,000 per operable unit is not supported by the information provided. In fact, it appears there is some evidence that implementation will not negatively impact costs or schedules.

We urge DOE to finalize the proposal so as to implement it as soon as possible. As stated in our letter dated May 20, 1993, it is acceptable that the background comparisons for operable units 1 and 2 are conducted in accordance with the "compromise approach" detailed in that letter. If any of the above items require clarification, please contact Bonnie Lavelle at (303)294-1067.

Sincerely,



Martin Hestmark, Manager
Rocky Flats Project

Enclosure

cc Susan Griffin, 8HWM-SM
Michael Gansecki, 8HWM-HW
Bruce Thatcher, DOE
Joe Schieffelin, CDH

BACKGROUND COMPARISON METHODOLOGY

